

Claims

1. A camera (2,102) comprising an image capture means (52), an objective lens (14,114) with a field of view (18,118) to image optical radiation (19,119) from an object plane (8) onto the image capture means (52), a strobe flash (16,116) for illuminating the object plane (8), electronic pulse circuitry (60,160) to pulse (75) the strobe flash (16,116) at a rate which is sufficiently quick that the illumination appears to a user of the camera (2,102) to be substantially steady owing to persistence of vision, and a shutter means (104) to synchronise the capture of one or more images by the image capture means (52), each image being captured with at least one pulse (75) from the strobe flash (16,116), characterised in that the shutter means (104) is adapted to capture images at a rate substantially below the rate at which the strobe flash (16,116) is pulsed.
2. A camera (2,102) as claimed in any preceding claim, in which the pulse circuitry (160) is arranged to ramp up (45) the perceived intensity of the steady illumination prior to the capture of the image, and/or to ramp down (49) said intensity after capture of the image.
3. A camera (2,102) as claimed in Claim 2, in which the ramp up (45) and/or ramp down (49) of the perceived intensity of the steady illumination takes place over at least 0.25 second.
4. A camera (2,102) as claimed in Claim 2 or Claim 3, in which the ramp up (45) and/or ramp down (49) of the perceived intensity of the steady illumination takes place over less than 1 second.

5. A camera (2,102) as claimed in any preceding claim, in which the rate at which the strobe flash (16,116) is pulsed (75) is at least 50 Hz.

5 6. A camera (2,102) as claimed in any preceding claim in which the rate at which the strobe flash (16,116) is pulsed (75) is at least 10 times higher than the image capture rate.

10 7. A camera (2,102) as claimed in any preceding claim, in which the image capture means is an electronic detector (52) array, the shutter means comprising electronic control circuitry (104) to synchronise the capture of an image by the detector array (52) with the strobe flash  
15 (16,116).

8. A camera (102) as claimed in Claim 7, in which the camera (102) includes an actuator (24) to scan (26,30) the field of view (18,118) of the objective lens (14,114) in  
20 the object plane (8) as the control circuitry (104) captures images of different fields of view (118).

9. A camera (102) as claimed in Claim 8, in which the actuator (24) scans the field of view (118) of the  
25 objective lens (114) continuously as the control circuitry (104) captures images of different fields of view (118).

10. A camera (2) as claimed in any preceding claim, in which the camera is a hand-held camera (2).

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~~11.~~ A document scanning system (101) comprising a camera (102), the camera being as claimed in Claim 8 or Claim 9, and a mount (110) by which the camera (102) may be positioned to image onto the detector (52) a portion of a  
35 document (6) in the object plane (8), wherein the actuator (24) is operable to scan (26,30) the field of view (118)

of the objective lens (114) as the control circuitry (104) captures images of different portions of the document (6).

12. A document imaging system (101) as claimed in Claim 5 11, in which the system comprises means (104) by which images captured from adjacent or overlapping fields of view (118) can be joined into a composite image of the adjacent or overlapping fields (118).

10 13. A method of imaging a document using a camera (102), the camera being as claimed in Claim 8 or Claim 9, characterised in that the method comprises the steps of:

15 a) aiming the camera (102) at a document (6) in the object plane (8) so that a portion of the document (6) falls within the field of view (118); and

20 b) using the actuator (24) to scan (26,30) the field of view (118) of the objective lens (114) as the control circuitry (104) captures images of different portions of the document (6).

25 ~~14.~~ A method of scanning a document using a document scanning system (101), the document scanning system being as claimed in Claim 10 or Claim 11, characterised in that the method comprises the steps of:

30 c) mounting (110) the camera (102) to image onto the detector (52) a portion of a document (6) in the object plane (8); and

d) using the actuator (24) to scan (26,30) the field of view (118) of the objective lens (114) as the control circuitry (104) captures images of different portions of 35 the document (6).

15. A method of scanning a document as claimed in Claim 14 when appendant from Claim 12, in which the method comprises after step d) the step of:

- 5 e) joining images captured from adjacent or overlapping fields of view (118) into a composite image of the document.

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